

REMARKS

Upon entry of the instant amendment, claims 1-21 remain pending in the above-identified application, with claims 1-6 and 20-21 standing ready for further action on the merits, and remaining claims 7-19 being withdrawn from consideration.

In this Amendment, claim 1 has been amended. Support for amended claim 1 can be found at page 7, lines 21-27 of the present specification (*e.g., the total number (x) of seats ... such as $2 \leq x \leq 1000$*) and Figs. 1b, 1d and 5c, which disclose 10 seats. Incidentally, the limitation “such that said layer I is fixed at said angle α in said seat,” which was added in the previous amendment, has been deleted. Claim 22 has been cancelled, without prejudice or disclaimer of the subject matter contained therein, in order to prevent a redundancy with amended claim 1.

Accordingly, the present amendments to the claims do not introduce new matter into the application as originally filed. As such entry of the instant amendment and favorable action on the merits is earnestly solicited at present.

Claim Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-5, and 20-22 are rejected under 35 U.S.C. § 102(e) as being anticipated by Clarke et al. US ‘470 (US 2002/0142470). Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Clarke et al. US ‘470 in view of Sundberg et al. US ‘825 (US 6,086,825). These rejections are respectfully traversed.

Distinctions and Nonobviousness over the Cited References

As recited in currently amended claim 1, the claimed invention is directed to a microfluidic arrangement which comprises:

A) one or more microfluidic devices, each of which comprises a set (set I) of one or more essentially equal microchannel structures that are comprised within a common generally planar layer of the device (layer I),
each of said microchannel structures comprises an internal microconduit portion in which an active liquid flow is used; and

B) an instrument, which is intended for processing said one or more microfluidic devices and comprises a spinner motor and a rotary member,

wherein

I) said rotary member comprises not less than 10 and not more than 1000 of seats for holding at least one of said one or more microfluidic devices, each of said seats

i) is capable of being positioned at the same radial distance as any of the other seats of the group, and

ii) aligns layer I essentially radially at an angle α relative to the spin plane

where $45^\circ \leq \alpha \leq 90^\circ$;

II) said internal microconduit portion has an upstream part that can be positioned at a shorter radial distance than a downstream part when the corresponding microfluidic device is placed in any of said one or more seats. (Emphasis added.)

The claimed invention employs the rotary member comprising seats for holding microfluidic devices provided with microfluidic structures within a common generally planar layer of the microfluidic device (*i.e.*, at an angle separate from 0° relative to the spin plane of the rotary member).

It is stated in the Office Action that the claimed invention is disclosed in Clarke et al. US '470, which relates to a centrifugal analyzer provided with two rotatable balls each arranged to hold a microscopic slide, wherein the angle of the slides relative to the spin plane may be changed by rotating the ball.

In this amendment, in order to further clarify the claimed invention, claim 1 has been amended to recite that the rotary member comprises the total number 10 to 1000 of the seats. Since each seat holds a microfluidic device which is provided with several microfluidic structures at the claimed angle (*i.e.*, $45^\circ \leq \alpha \leq 90^\circ$) relative to the spin plane, the seats can be provided closer to each other so that a larger number of seats can be provided. Consequently, the number of microfluidic structures that can be simultaneously processed by the rotary member can also be increased relative to a device in which the microchannel structures are arranged to lie in the spin plane (with angle 0°). Thus, a larger number of microchannel structures can be processed at the same time and the smaller space.

In view of Figs. 5A and B of Clarke et al. US '470, at best, only two slides can be provided in combination with the rotatable balls. Due to the spherical shape of the ball, the dimensions of the ball must at least match the length of the slide in all directions. Hence, even if the slides in Clarke et al. US '470 is disposed at different angles relative to the rotary plane, further space cannot be saved in the centrifugal analyzer since the size of the balls are the same

regardless of their orientation. Furthermore, if more balls are tried to be provided in the centrifugal analyzer, it is evident from Figs. 5A and B that no additional balls can be provided on the spin plane due to the support structures (see, *e.g.*, 43, 44, 63, and 64 in Fig. 5A) installed beside the balls for controlling their operation. Hence, the embodiment, as shown in Figs. 5A and B, can employ only two slides, at best.

Further, the centrifugal analyzer as shown in the Figs. 3A and B of Clarke et al. US '470 has only four slides which lie flatly on the spin plane. Even if more slides are added on the centrifugal analyzer, for example, by placing additional slides between the slides as shown in Figs. 3A and B, the centrifugal analyzer can have, at best, eight slides in view of the structure as shown in Figs. 3A and B. In short, Clarke et al. US '470 discloses only four slides, and even if the centrifugal analyzer is modified to increase the number of the slides, the number is eight, at best, because of the structure as shown in Figs. 3A and B.

Therefore, Clarke et al. US '470 merely discloses the embodiment where the slides may be angled relative to the spin plane by arranging them on rotatable balls, and the number of the slides which can be employed is limited to eight, at best, because of the structure,. Consequently, Clarke et al. US '470 does not provide any motivation with one skilled in the art in need of providing the larger number of the slides so as to arrive at the claimed invention.

Furthermore, in view of the purpose of the invention, the centrifugal analyzer of Clarke et al. US '470 is intended for use in a spacecraft (see paragraph [0007] of page 1), and thus intended to be used in tight areas. Hence, in view of the purpose, Clarke et al. US '470 teaches away from increasing the number of the slides by enlarging the area of the spin plane.

Therefore, the claimed invention is not anticipated by Clarke et al. US '470 because Clarke et al. US '470 fails to teach every feature of claim 1 as required.

Further, the secondly reference, Sundberg et al. US '825 is provided to teach aspects of the dependent claims and fails to remedy Clarke et al. US '470's deficiencies. Therefore, there is not provided any rationale and/or reasonable expectation of success based on the combination of the cited references, by which one skilled in the art could arrive at the claimed invention, since the cited references fail to disclose or suggest each of the instantly claimed features, as explained above. Thus, it is submitted that the claimed invention is not obvious over Clarke et al. US '470 in view of Sundberg et al. US '825.

Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

CONCLUSION

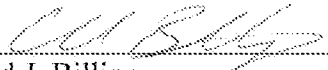
Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims is allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Toyohiko Konno, Reg. No. L0053 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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